

What is claimed is:

1. A regulator system for regulating the operation of an irrigation system, responsive to user programmed information, comprising

5 a) a control element for issuing watering control signals to an irrigation system, comprising at least one of (i) a duration programming device for programming a minimum amount of time and a maximum amount of time for the suspension of watering by the irrigation system, and (ii) a user adjustable temperature
10 programming device for programming a minimum allowed temperature for initiating a watering period by the irrigation system;

b) an irrigation system interface for connecting said control element with the irrigation system;

15 c) a switch for conveying the control signals from the control element to the irrigation system via the irrigation system interface, for either permitting or prohibiting watering by the irrigation system, responsive to the control signals generated by and received from the control element.

20 2. The regulator system of claim 1 comprising a duration programming device for programming a minimum number of days and a maximum number of days for the suspension of watering by the irrigation system.

25 3. The regulator system of claim 1 comprising a user adjustable temperature programming device for programming a minimum allowed temperature for initiating a watering period by the irrigation system.

4. The regulator system of claim 1 comprising both (i) a duration programming device for programming a minimum amount of time and a maximum amount of time for the suspension of watering by the irrigation system, and (ii) a user
5 adjustable temperature programming device for programming a minimum allowed temperature for initiating a watering period by the irrigation system.

5. The regulator system of claim 1 further comprising a rainfall detection sensor which is capable of sensing whether rain is currently falling or a rate of rainfall,
10 and which transmits control signals to the irrigation system responsive to a rain currently falling condition or a rate of rainfall.

6. The regulator system of claim 1 further comprising a rainfall detection sensor which is capable of sensing whether rain is currently falling or a rate of rainfall,
15 and which alternatively wirelessly transmits a watering signal or a watering suspension signal to the irrigation system.

7. The regulator system of claim 1 further comprising a rainfall accumulation sensor which is capable of measuring a quantity of accumulated rainfall; and
20 which alternatively transmits a watering signal or a watering suspension signal to the irrigation system responsive to a quantity of accumulated rainfall condition.

8. The regulator system of claim 1 further comprising a rainfall accumulation sensor which is capable of measuring a quantity of accumulated rainfall; and
25 which alternatively wirelessly transmits a watering signal or a watering suspension signal to the irrigation system responsive to a quantity of accumulated rainfall condition.

9. The regulator system of claim 7 wherein the rainfall accumulation sensor comprises hygroscopic material that expands upon contact with moisture from water vapor, rain, snow, or ice.

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10. The regulator system of claim 9 wherein a rainfall accumulation sensor switch is connected mechanically to said hygroscopic material and electrically to a transmitter, which transmitter is wirelessly connected to the irrigation system, said rainfall accumulation sensor switch being responsive to said hygroscopic material expanding a given amount indicative of a predetermined level of atmospheric precipitation, said rainfall accumulation sensor switch enabling said transmitter to transmit signals to the irrigation system indicative of an atmospheric precipitation condition.

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11. The regulator system of claim 1 wherein the irrigation system interface is connected to the irrigation system by wiring.

12. The regulator system of claim 1 wherein the irrigation system interface is connected to the irrigation system by a radio frequency, infrared, or ultrasonic transmitter for wirelessly transmitting control signals to the irrigation system.

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13. The regulator system of claim 1 further comprising a remotely located receiver receptive of wireless signals from a transmitter, for converting the wireless signals into electrical control information, for application to said control element for affecting timed preprogrammed operation of said irrigation system, said control element being responsive to the presence of said electrical control information for terminating any present or programmed future operation of said irrigation system,

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said control element being further responsive to the termination of said electrical control information for resuming timed preprogrammed operation of said irrigation system.

5 14. The regulator system of claim 12, wherein said transmitter comprises at least one energy source selected from the group consisting of an electric power line, a battery, solar energy, light energy, hygroscopic expansion energy, wind energy, temperature dependent expansion energy, and combinations thereof.

10 15. The regulator system of claim 1, further including at least one sensor selected from the group consisting of a light sensor, a pressure sensor, a wind sensor, and combinations thereof, connected to the irrigation system and which either permit or prohibit watering by the irrigation system, responsive to a signal generated by a sensed condition.

15 16. The regulator system of claim 1, further comprising a bypass switch which allows the current state of the control element to be ignored, which bypass switch is automatically resetting based on a change in state of the control element.

20 17. The regulator system of claim 1 further comprising a timed preprogrammed watering cycle irrigation controller.

25 18. The regulator system of claim 1 wherein the control element comprises a programmable logic controller for issuing watering control signals to an irrigation system.

19. The regulator system of claim 1 wherein the control element comprises a microprocessor for issuing watering control signals to an irrigation system.

20. A regulator system for regulating the operation of an irrigation system,
responsive to user programmed information, comprising

a) a control element for issuing watering control signals to an irrigation system, comprising both (i) a rainfall detection sensor which is capable of sensing whether rain is currently falling or a rate of rainfall, and which wirelessly transmits control signals to the irrigation system responsive to a rain currently falling condition, and (ii) a rainfall accumulation sensor which is capable of sensing a quantity of accumulated rainfall, and which wirelessly transmits a watering signal or a watering suspension signal to the irrigation system; wherein each of the signals from the rainfall detection sensor and the rainfall accumulation sensor are independently recognized by the irrigation system and independently cause a response by the irrigation system;

b) an irrigation system interface for connecting said control element with the irrigation system;

c) a switch for conveying the control signals from the control element to the irrigation system via the irrigation system interface, for either permitting or prohibiting watering by the irrigation system, responsive to the control signals generated by and received from the control element.

21. The regulator system of claim 20 wherein the signal from the rainfall detection sensor is ignored by the irrigation system after a predetermined period of time if a

signal from the rainfall accumulation sensor is not received by the irrigation system within said predetermined period of time.

22. The regulator system of claim 20 wherein the predetermined period of time,
5 the amount of rainfall detected by the rainfall detection sensor for transmitting a control signal, and the amount of rainfall accumulated by the rainfall accumulation sensor for transmitting a control signal are programmable for variability.

10 23. The regulator system of claim 20 wherein the rainfall accumulation sensor comprises hygroscopic material that expands upon contact with moisture from water vapor, rain, snow, or ice.